

Focus on Recycled Aluminum Cans

from Ecology's Solid Waste and Financial Assistance Program, Statewide Resources Section

What happens to recycled aluminum cans?

Collection and Processing

Aluminum cans are more widely recycled than any other consumer container. Some people take them to recycling centers that pay cash, while others donate them to nonprofit groups that sell cans to raise funds. Still others use the convenience of curbside collection programs. These programs do not pay for aluminum cans, but use the revenue from cans to help finance collection of other recyclable materials such as bottles and paper. Most curbside collection programs take everything into a "materials recovery facility" (MRF, pronounced "murf") to be sorted and prepared for transport to manufacturers.

Once aluminum cans collected at curbside arrive at a MRF, contaminants are removed in various ways. Magnets offer an easy way to remove tin-plated steel cans. Or, in a reverse approach, aluminum cans may be removed by jets of air. The aluminum cans, being lighter, are blown off a conveyor belt while the heavier steel cans and glass bottles continue on. Less powerful air streams can remove scraps of paper or plastic. The contaminant-free aluminum cans that remain will then be pressed into large bales for shipment to an aluminum plant.

Recycling centers generally do not have the expensive sorting machinery used by a MRF. Small businesses that buy back aluminum cans must rely on the public to assure that cans arrive already free of contaminants. The larger companies that buy baled aluminum from recycling centers will reject contaminated loads, or even cease to do business with centers that bring in contaminated loads. Neglect on our part can put recycling centers out of business, or keep large amounts of aluminum from being recycled because it is too dirty or contains too much water.

Remanufacture

Most recycled aluminum cans go into producing sheet aluminum for making new cans. The sheet aluminum plant receives bales of used cans. These are melted down, and lacquered labels burn off in the process.

Can tops are made of an alloy containing a higher ratio of magnesium than the alloy used for the body of the can. As a result, the molten aluminum derived from complete cans has too little magnesium for new tops, and too much for new bodies. New aluminum or scrap low in magnesium is therefore added to the batch. This brings the level of magnesium down until it is suitable. Can manufacturers roll the resulting aluminum into sheets that they can use to fabricate new can bodies.

Sheet aluminum is thicker than the wall of a finished can. During the process of making a can, the aluminum is stretched much thinner. The process begins with punching circular sections out of the sheet. The resulting aluminum disks are pressed into cup shape. The walls of these cups are elongated by an "ironing" process: round, heated machinery spreads the aluminum upwards much as a rolling pin will expand the area of a pie crust. The thickness of a finished can is not uniform, however. The bottom and the upper rim are thicker. When the can is of sufficient height, the top is trimmed level and clean. A concave dome is pressed into the bottom, and the upper rim is angled inwards then partially flanged outwards. A label is lacquered onto the outside surface and the inside is coated to prevent corrosion and preserve taste.



Tops are also made from sheet aluminum, though its thickness and the alloy are slightly different from the sheet used for can bodies. Also, the anti-corrosive coating will already be on this sheet when disks are punched out. This is possible because tops retain their original thickness instead of being pressed wider and thinner. The edges are curled where the tops will attach to the flanged upper rim of the can, and a button is pressed into its center. The button serves as an attachment for the tab, which consumers will use to pop open the can. The edges of that future opening are pressed very thin before the tab is attached.

For more information

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